भारतीय मानक
Indian Standard

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चेयरलिफ्टस के लिए कुर्सियां — विशिष्टि

(पहला पुनरीक्षण)

Chairs for Chairlifts — Specification

(First Revision)

ICS 97.220.20

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Price Group 2

Continuous Bulk Conveying, Elevating, Hoisting, Aerial Ropeways and Related Equipment Sectional Committee, MED 06

FOREWORD

This Indian Standard (First Revision) was adopted by the Bureau of Indian Standards, after the draft finalized by the Continuous Bulk Conveying, Elevating, Hoisting, Aerial Ropeways and Related Equipment Sectional Committee, had been approved by the Mechanical Engineering Divisional Council.

This standard was first published in 1979.Substantial changes in the industrial practices necessitates this revision.

The major changes in this revision are as follows:

a) Capacity of chairs for passenger chairlifts has been specified;
b) Temperature range has been restricted upto (-) 30°C only;
c) Latest materials as per relevant Indian Standards have been mentioned for manufacture of chair for chairlifts;
d) Factor of safety for design of chairs has been defined in this Standard; and
e) For design purposes, the mass of passengers has been specified.

Nothing in this standard is intended to contravene any provisions of the statutory regulations wherever they are in force.

Composition of the Panel-1 on ‘Aerial Ropeways’ of MED 06 responsible for the formulation of this Standard is given at Annex B.

For the purpose of deciding whether a particular requirement of the standard is complied with the value, observed or calculated, expressing the result of a test or analysis shall be rounded off in accordance with IS 2 : 1960 ‘Rules for rounding off numerical values (*revised*)’. The number of significant places retained in the rounded off values should be the same as that of the specified value in this standard.

Indian Standard

CHAIRS FOR CHAIRLIFTS — SPECIFICATION

(First Revision)

1 SCOPE

1.1 This standard covers the requirements for chairs for passenger chairlifts.

1.2 This standard is applicable to chairs used on chairlifts working in anti-clockwise direction, the normal direction of chairlift. In exceptional cases where local conditions require movement of the chairlift in the clockwise direction, the provision laid down in this specification may also be applied with the only difference that the suspension bar of the chairs seen from the front may be to the left of the chair.

1.3 This standard is applicable to chairs for installations, having a speed not exceeding 4.25 m/s and are suitable for areas experiencing temperature upto (-) 30°C.

2 REFERENCE

The Indian Standards listed at Annexure A contain provisions which, through reference in this text, constitute provision of this standard. At the time of publication, the editions indicated were valid. All standards are subject to revision, and parties to agreements based on this standard are encouraged to investigate the possibility of applying the most recent editions of the standards.

3 CAPACITY OF CHAIRS FOR PASSENGER CHAIRLIFTS (Chairs used in Chairlifts shall have a maximum capacity of 8 passengers)

4 MATERIAL

4.1 The suspension bar shall be manufactured from tubes/hollow sections as per IS 1161, IS 2062 and IS 4923 having no longitudinal welds and shall be seamless. Their interior shall be protected against corrosion.

4.2 The seat of the chairs shall be manufactured from either suitably treated and seasoned wood, or fiberglass-reinforced plastic or foam cushions suitably lined or high strength aluminum alloy.

4.3 Safety bars shall be manufactured from metallic material as per IS 1030, IS1161, IS 2062, IS 4923 and IS 14329. Other material like wood and nylon etc. may be used, provided the requirements laid down in **6** are satisfied.

5 GENERAL REQUIREMENTS

5.1 The free passage of the suspension bar and the chair as a whole while passing over towers to be ensured even in presence of inward and outward oscillation of 12° with a minimum clearance of 0.5 m from tower structure.

5.1.1 In order to ensure the free movement of passengers and personnel in the station, the side clearance between the space occupied by the chair and fixed obstacles belonging to the installation shall be not less than 0.40 m measured towards the interior of the line and 1 m measured towards the outside. If the vehicles are not guided, these values shall be maintained even when the vehicle is inclined transversely at 12°.

5.1.2 The ends of the suspension bar shall be closed with caps so that it is weather tight.

5.1.3 The suspension bar shall enclose the seating only on the side or on the rear and below the seat.

5.1.4 The arms of the chair shall have a smooth surface without any projections even for holding the free end of the safety bar of the seat when it is in the locked position.

5.1.5 Any gap in the seat except in front and sides shall not be more than 25 mm.

5.2 Factor of Safety

5.2.1 For all components constituting the vehicle, safety factor (ratio of the ultimate strength and stress in metal) shall be at least 5 under the static conditions. This factor of safety may be increased suitably to take into account the dynamic conditions to assure the desired degree of safety.

5.2.2 Material, Welding procedure and type of electrodes shall be such chosen that they do not fail at local ambient conditions.

5.2.3 For design purposes, the mass of passengers shall be taken as 80 kg/passenger.

6 TESTING OF SAFETY BAR

6.1 The safety bar assembly shall be tested in assembled condition in closed position. The test shall cover all the joints and locking arrangements in the safety bar assembly. The test shall consist of applying a force of 150 N in the direction perpendicular to the plane of rotation in closed position. During the test no elastic deformation shall be noted when the load applied is held for 5 min.

6.2 A test similar to **6.1** shall be carried out with a load of 300 N applied on safety bar. There shall not be any permanent deformation of any part of the assembly after the test when the test is repeated ten times in an hour.

6.3 Crack Detection Test

All components shall be subjected to NDT for any cracks and blow-holes at an interval of six months.

7 NUMBERING

In order to distinguish the chairs on the line, they shall be successively numbered. Also at a prominent position in the chair, a nameplate indicating maximum number of passengers shall be displayed.

8 BIS CERTIFICATION MARKING

The product(s) conforming to the requirements of this standard may be certified as per the conformity assessment schemes under the provisions of the *Bureau of Indian Standards Act*, 2016 and the Rules and Regulations framed thereunder, and the product(s) may be marked with the Standard Mark.

ANNEX A

(*Clause* 2)

LIST OF REFERRED INDIAN STANDARDS

IS No.	*Title*
814 : 2004	Covered electrodes for manual metal arc Welding of carbon and carbon manganese steel (*sixth revision*)
816 : 1969	Code of practice for use of metal arc welding for general construction in mild steel (*sixth revision*)
823 : 1964	Code of procedure for manual metal arc welding of mild steel
1024 : 1999	Code of practice for use of welding in bridges and structures subject to dynamic loading (*second revision*)
1030 : 1998	Carbon steel castings for general engineering purposes (*fifth revision*)
1161 : 2014	Steel tubes for structural purpose — Specification (*fifth revision*)
2062 : 2011	Hot rolled medium and high tensile structural steel (*seventh revision*)
4923 : 2017	Hollow steel sections for structural use — Specification (*second revision*)
9595 : 1996	Metal arc welding of carbon and carbon manganese steels —Recommendations (*second revision*)
14329 : 1995	Malleable iron casting

ANNEX B

(*Foreword*)

COMMITTEE COMPOSITION

Composition of the Panel-1 on 'Aerial Ropeways' MED 06

Organizations	*Representative(s)*
In Personal Capacity	Shri A. Bhadra (***Convener***)
In Personal Capacity	Shri C. K. Karmakar
In Personal Capacity, Kolkata	Shri Dwijendra Lal Das (*Invitee*)
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CRS, Pvt Ltd, Kolkata	Shri K. Bose
Damodar Ropeways & Infra Ltd, Kolkata	Shri Ranjan Mukherjee
Usha Breco Limited, Ghaziabad	Shri Manoj Panwar

Member Secretary

Shri A. K. Mohindroo
Scientist 'C' (MED), BIS

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Amendments Issued Since Publication

Amend No.	Date of Issue	Text Affected

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